

## ABSTRACT

Non-noble metal transition metal catalysts can replace platinum in the oxidation reduction reaction (ORR) used in electrochemical fuel cells. A  $\text{Ru}_x\text{Se}$  catalyst is prepared with comparable catalytic activity to platinum. An environmentally friendly aqueous synthetic pathway to this catalyst is also presented. Using the same aqueous methodology, ORR catalysts can be prepared where Ru is replaced by Mo, Fe, Co, Cr, Ni and/or W. Similarly Se can be replaced by S.

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